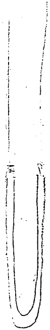
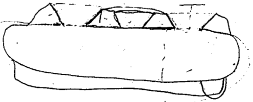
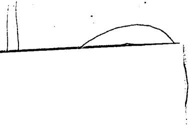
Menlo Park Notebook #107 [N-80-04-02]

The entries in this notebook contain only the month and the day. The book probably covers the period April 1880-January 1881. Its author is unknown. Included are notes relating to tests of insulating materials, primarily glass, quartz, and calcite; notes on magnetism experiments; and notes on chemical experiments. There are also a few drawings of circuits. The label on the front cover is marked "107" and "Apr 1880." The pages are unnumbered, and the book has been used in both directions. Approximately 100 pages have been used.

apr 1880?







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120 Broadway, New York.
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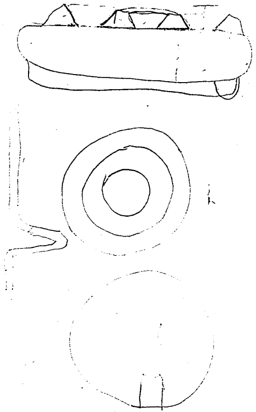
GENERAL ELECTRIC.
44 Broad St. N.Y.
May 1, 1896

apr 1880?



Times, 2 min charging
1 " ~~the~~ discharge

Max. of each dis. read

Lead Electrode

(1) Glass = Green plate
(2) " = White "
(3) " = Window glass
(4) " = Guttapercha
(5) " = [illegible]
6 " = Polariscope

Quartz = 12.2) L = Eyepiece
Opt @ 5 rt. = +5
Recedes very fast after reaching max in case of Qz(1)

Elec. Abs. Dec. 4

Diel	1st Time	2nd "	3rd "	
Qtz (1)	-85	-70	-55	Elec. +.22
" 1	-40	-65	-47	" +.15
	-21	-38	-16	" +28 1st contact longer
Glass (2)	-35	-30	-15	+20
	-38	-33	-31	+30
	-42	-44	-30	+28
Glass (3)	-40	-33		+20
	-45	-33		+20
" (5)	-30	-24		+18
Qtz (2)	-62	-40		+16
	-35	-29		+12
Qtz (1)	-43	-28		+40

The residual discharge of Qtz – rubber, [illegible], &c

Glass as before
Ch 2 min
Interval 30 seconds.

Plates in evaporator over Sulfuric acid, disch. very fast.
Ch. about the max. that can be attained
* Shot up to 60, many back & then receded 50

	Dec 8 1	2	
Qtz. (1)	40.	20	+ 30
	45	20	+ 30
Glass &c	220	60	—
	160	50	– 15
	115	85	– 30
Selenites	45	38	– 30
	85	55	– 22
	72	40	– 30
Glass Scratched			
	35	30	
	~~50~~ 4	35	
	110	60.	
Qtz "	55	57	Faint
	130	—	—

Res. Sch. Exp

— April 2 —

Process.

Battery 6. Leyden Jars —
Charged 3 Sparks. — {Hauns [illegible] Jar
after 20 Seconds, } partly discharged
momentary charge of plate, then discharge
& contact with [illegible] after five
seconds, — Electrometer read after 10 sec
& total, —

No	10 sec	total.	
1	80.	80.	?
2	100, —	—	— ? —
3	35	35	— — —
4	38	40	— (No increase
5	— 73	—	— — !!!
6	120	24	— — — —
7	— 28	— 18	— — —

5 Sparks

No.	10 Sec.	Total	
1	75	75	No Increase
2 l	− 40	− 40	
3	+ 58	—	—
4	− 25	—	—

5 Sec. Contact

r + 125, — leakage
l − 64 — —
l − 135 — —
10 Sec Interval, 5 Sec contact

r + 60
r + 99
l − 82
l − 78
r + 55
r —

~~After~~ 15-Sec. ~~Interval~~, 10 Sec Contact, — Appt. +.4
10 Sec — Increases !!!
r 35 — 63,
l 110, 130
r 80 85

Handle, — already on r or l,
r Total 115
l — 70 — (Induction defl to +70
r Defl scale —
r, 111 — (Ind. defl to −65
l 135 (" " +100
l 50 " " +120

Same Ind 50 − 36 = Total
l — − 70
r + 90
r + 175

l 140
r 119
l 155.
r 130
l 174
r 177
l 176
r 181
l 165

Same. — viz. —

l 173

Apr. 7 —

Glass (a) —
Intervals, 5 sec, contact-
5 sec earth
5 sec insulated
then Electrometer

Wind N.W.

Charge =
2 Sparks

+111
+151
+140
−153

−191
−190
+195
+165
+185

Battery wire discharged by Wheeler

+174
−180
+176
−182
+170

This reverse charge in Quarz appears normal and the abs. dis-charge [illegible] grows slowly & only reaches a maximum after about 1 minute. —

Quarz as — Apr 7.

Same conditions as last page

− 60# Handle of Commutator
− 58 in direction which gives +
− 65. Charge in Glass !!! —

+ 78 Handle of C, to give ~~as last~~
+ 74 — charge in Glass !
+ 65 "

Glass — repeated —— Handle same as in last exp with Quarz —

∓ 180
− 189
− 178

+ 188 Handle as in 1st Quarz
+ 190
+ 186

Calcite cas

— 40
— 50
— 43

Handle same as in
hand Exp with glass

Other conditions the same

+ 40
+ 44
+ 43

Handle same as in 1st
Exp with glass

!!!

Dep'd. on time, new charge
5 sec.

5 sec contacts = −150 handle up !!

10 sec " = 0 — —

12 — —

5 sec = — —

This same effect proved to lie in the inducing effect of one of the insulators of the apparatus ——

The instrument was modified so that [illegible] constant (both con[illegible] and this source of error ~~eliminated~~ disappeared

Opt - 4 Apr. 8. —

Glass and Calcite give as yesterday opposite deflections

Calcite

5 Sec. Contact
-142
-139
-143

10 Sec. contact
(1) left the scale!
(2) stopped after 220 ~~/~~ pause
(3 - a very [illegible].)
(3) left the scale!

2 Sec. Contact,
-124
-104
-79
-113
-102

2 Sec Contact
-68
-70
-71
-74

Apr 9

New arrangement, of Apparatus

1) Glass case,

5 Seconds Contact =	Off scale !!
3 Seconds " ,	Off scale,
2 Seconds "	Off Scale.
1 Second "	+ 200.
	+ Off
	+ Off

Quartz. 5 Seconds.	+ 9.5
	+ 21.
	+ 35.
	+ 41
	+ [illegible]
	+ 40.
	+ 32
	+ 60

er

Calcite (Ra)

5 Seconds, — — 13.0
0,
14.0
+ 0,
0.
+ 0, "

10 Seconds
No Effect, —
No Effect,

30 Seconds
No Effect, —

Glass repeated —
5 Seconds — Off Scale
30 " "

Quartz (Ra) –

Calcite (R) to Sparks

Electrometer increased effect by many [illegible] — and more charge given battery — gave same results — Frequent discharge of glass and Calcite showed that all was in order.

Apr 9

Glass and Sponge

Glass —

5 Seconds. — Off Scale

2 Seconds = + 225

+ 183

+ 193.

+ 205

+ 187

Sponge — 3 seconds + 301

— [illegible]

— [illegible]

— 4

+ 4

10 Seconds:

+ 1

+ 15

+ 20

+ 10

30 Sec.

+ 27

+ 26

+

[illegible] +87 0pr +.4

+91

+85

[illegible] = +89

Seconds. +79

+[illegible]

+[illegible]

Glass lens [illegible]

Second.

3rd +87

~~[illegible]~~

[illegible] (b) +45
+40
+42

[illegible] b = 40

[illegible]

5 Seconds Off Scale –

1 Second, Off Scale –

Glass had been previously washed and held in Bunsen flame to deprive it of all electricity. —

— Apr 12 1880 —

Glass.

30 Seconds contact – 5 Seconds to earth. — ___ Off Scale ±

20 Seconds. — Off Scale —

Electrometer made less sensitive —

30 Seconds interval = + 196
+ 204
+ 202 = 199.98
+ 197
+ 240

Quarz (a)

± 24
+ 37
+ 36 34.20
+ 35
+ 39

Calcite (a) = + 4.
+ 2.
+ 3.
+ 2.5
+ 2.0

Calcite (k)

+ 4.5
+ 5.0
+ 4.5
+ 4.5
+ 5.0

Quartz k. + 40

Glass – 180 –

Glass (k.) (not washed nor heated) clean – never before used. – 185

Apr 13 1880

Quartz (k) 0 pt – 10

30 seconds [illegible]

+ 23
+ 40
+ [illegible]
+ 65
+ 64

Glass – (k)

30 seconds. –

+ 225
+ 225

Glass a
30 sec — Off scale —
−10 = 0 pt

20 seconds. — +199

+123
+126
+118

Quartz. — (a)
20 seconds. — = +16.
+18.
+18.

Calcite (a) −9 = 0 pt
20 seconds −9
without Charging — −10

Charging −9
−8.
−8. —

−9
−10
−9
−9

Plate in desiccator over night.

Apr. 14

Glass.
10 seconds

+149
+146
+149

Quartz
10 seconds. —

+ ~~105~~ 15.
+ ~~145~~ 15
+17

Calcite

+9
+7.
+7

Glass repeated.
— 8 —

+150
+146
+140
+145

Apr 22

Glass (1) — 30 Seconds contact.

= 166.5
154.5 = 163.2
168.5

Quartz (1) 25.5
18.5 = 22.
24.5

Calcite (1) No Effect

Quartz (2) 22.5
17.5 = 20.
21.5

Calcite (2) No Effect

Glass (2) 162.5
175.5 = 169.5
170.5

Glass = 100.0 pret

Quartz (1) = 13.1

Quartz (2) = 12.3

Calcite (1) No Effect —

" (2) No Effect. —

May 1. —

Charge 1 Spark. —

5 Seconds	Glass (1)	137 129. 133	133
	Quarz (1)	13. 13. 13.	
	Calcite. (1)	1. 1. 0.	
10 Seconds	Glass (1)	199 180 189	
	Quarz. (1)	,21. .22 ,25	
	Calcite	0 0	

20 Seconds	Glass (1)	225 220 230
	Quarz (1)	34 35 34
	Calcite (1)	+2 +1 0
2 Sparks		
20 Seconds	Calcite (1)	2 +0 0
	Quarz (1)	+50
	Selen ½ - (3) Selenite (1) " (2)	135 170 130

Spectacle —	20	Ld	[illegible]
	10	"	225
Lense.	10	"	95 —
	20		140
Glass plate	10		210
(H) Quarz "	10		20

Quarz lense [illegible] 15-20

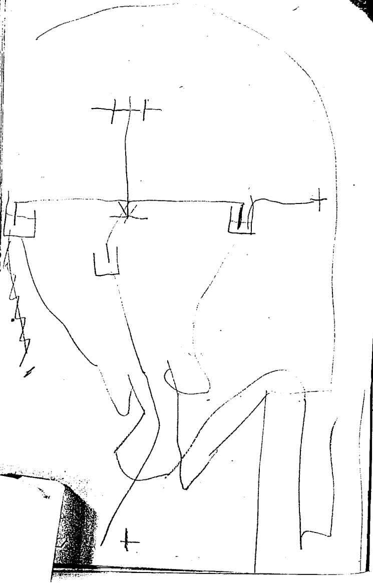
Mica plate, Larger = 80 —

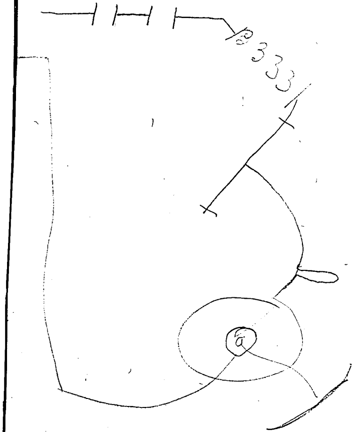
May 12

Series — Commercial Solution

4.15, — 22°. — Top Mark
4.45, — 22°
1.6 mm

Time	Temp	Merc.	Diff.	Room
4.15	22°			
4.45	22°	~~341.1~~	36.9	24.5
5.25	17°	304.2		23.75

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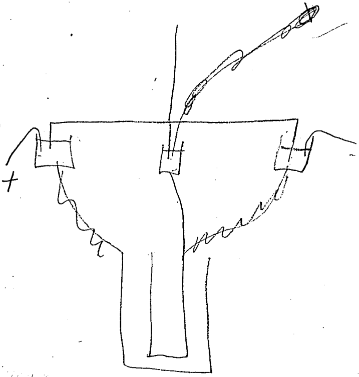
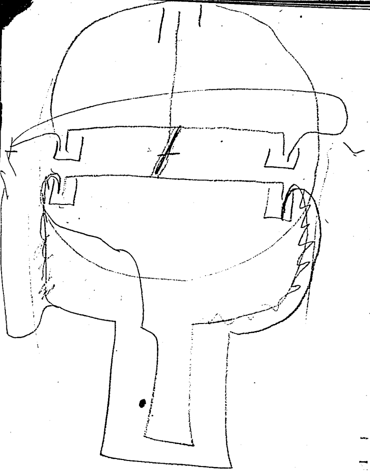
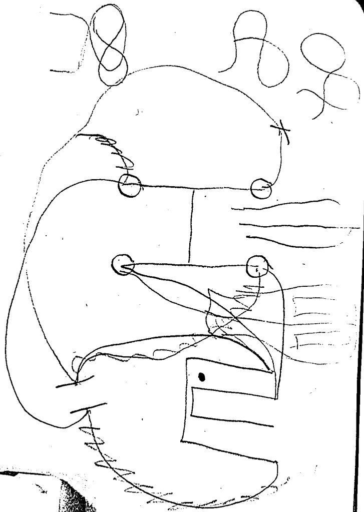
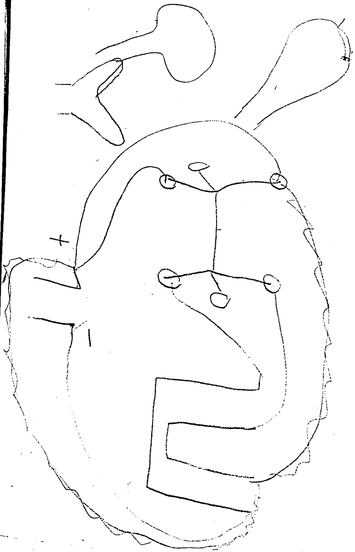
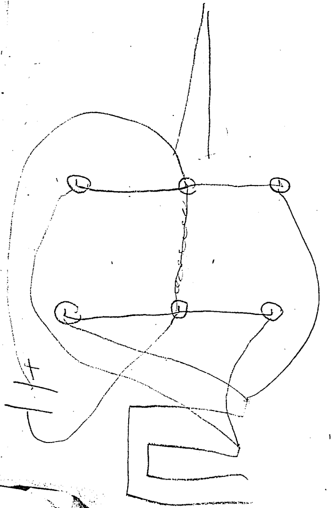
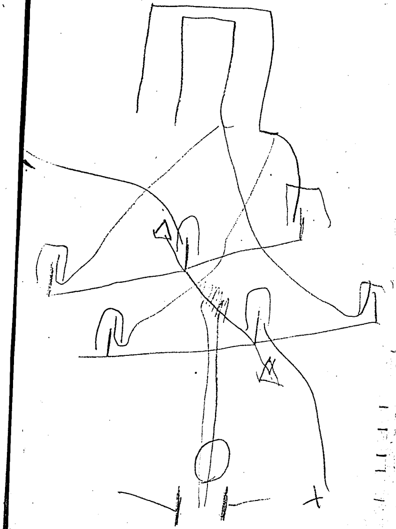


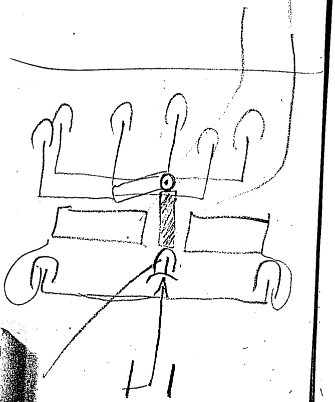


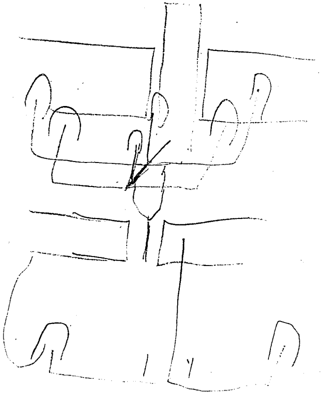


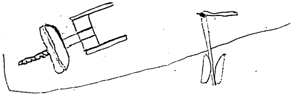


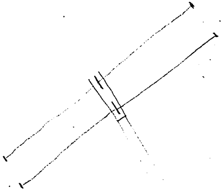


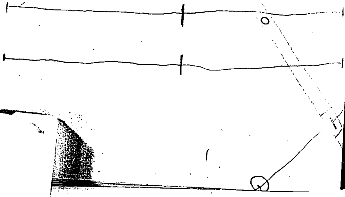


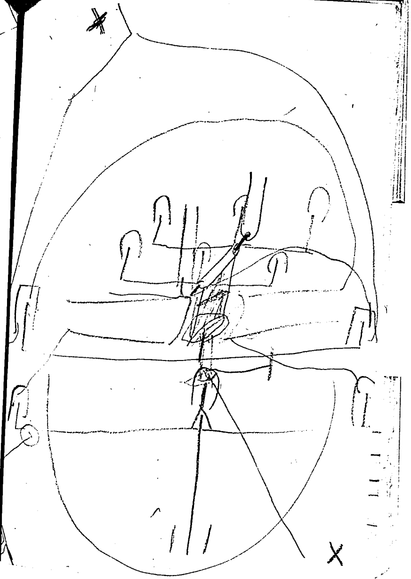


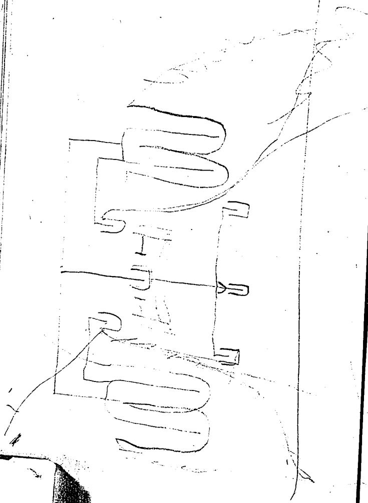


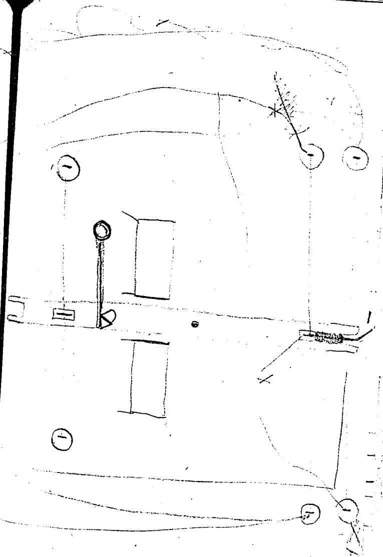


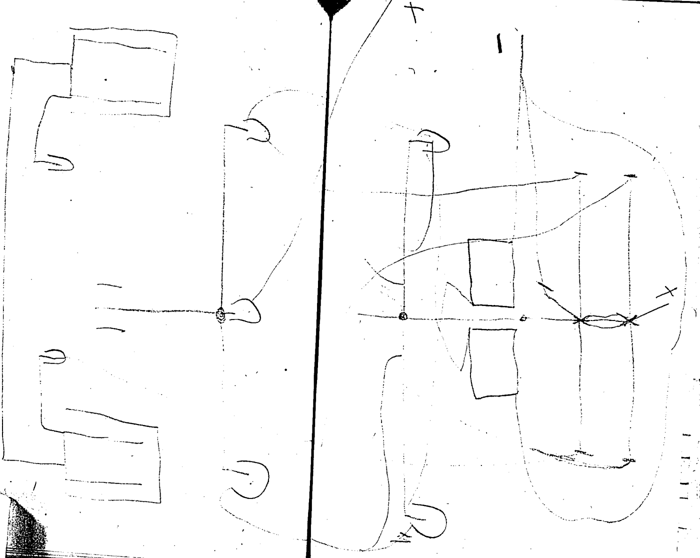


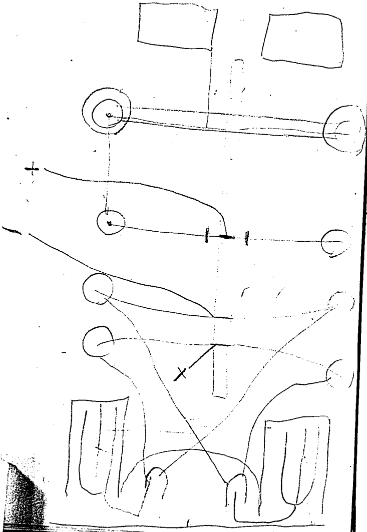


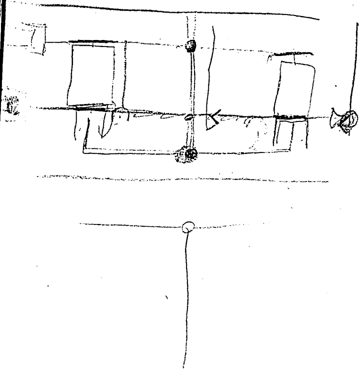


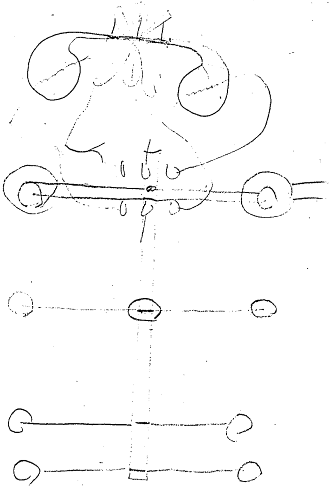


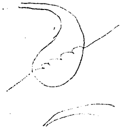


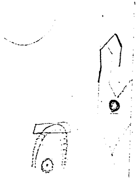


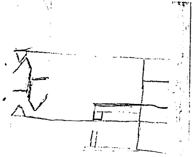












C

C

(1) 23,85 [illegible] before
23.25
.60

(2) 23,90 after
23.35
.55

(3) 23,95
23 2 0
7,5

---

(1) 4,28
5 6 0
132

41

#

	log Sin.	Sin defl
Sin Defl. 7°0'	= 9.0858945	0.12187
6°7'	= 9.0263865	0.10687
6°3'	= 9.0240157	0.10569
6°0	= 9.0192346	0.10453
6°0	= 9.0192346	0.10453
5°36' 30"	= 8.9913020	.098016

Times are 15 min. + 20, 45 + 19.0

+ 24 + 25

(1) 0.25 hours

(2) 21.0

(3) 40 0

(4) 64.0

(5) 89.0

90.0

Set of iron in Mag. field

Magnet No. 1 3 in. 1/2 in. - oe

Magnetized Dec 20, @ 6,15

Tested on Rowland's Sin Gal.

			Defl #
Dec	20	630 PM.	7° 0'
"	21	315 "	6° 7'
"	22	11.15 AM	6° 3'
"	23	11 15 "	6° 0'
"	24	12 15 "	6° 0'
"	24	3 15 "	5° 39' 5° 39
"	"	"	5° 34 = 5° 36' 30" 5° 34

These two readings with Magnet [illegible] at different [illegible] ([illegible]) differed

Temp about 12° C

Amt Iron Filings less than [illegible] gr.

Dec 25 — Infl of hot water —

Magnet II. same size magnetized at same time & in the same way as I. gives on being placed on sin Gal (Ben. Lum)

11. 35 AM. 6° 6'
6° 6'

Exposed for 10 min to boiling water. —

log m = 8.8507572 m = .07091

Dec 25 — Xmas

10 30 AM. 5° 39'
5° 39'

Magnet inserted in same test tube with Hg & water — & placed for several minutes in a beaker of boiling water to test heating effect. — Hg, — slightly warm to touch after taking out. Magnet replaced afterwards gave

11. 15 AM. — 5° 39'
5° 40'

Exposed to boiling water for a few seconds gave —

log m = 8.9431743

m = .087735 (1)

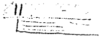
5° 42'
5° 42'

Boiled for 10 min gave (2) 4° 5'
4° 5'

Opt. 179° 54'

Dec 25, Opt. reset —

Magnets (2) set in position



Reads, at 2.30 PM.

sin = .1080

log sin 9.03347212

— — 6° 12'
6° 12'

Dec 25 1 PM. 6° 13'
6° 14'

Dec 26. 10.30 6° 11'
6° 12'

" 3.30 6° 8'
6° 9'

4.30 6° 9' 6° 9'
6° 9' 6° [illegible]'

1

4.30 to Six. —

Int action No change

Dec 27 12 M. 6° 5'

" 28 1 P.M. 6° 0'

Dec 28 1 PM. 6° 0°

6° 0

" 29 12 PM. 5° 57' 30

Adj. – 29 1.30 5° 58'

After digesting with HCl.

4 P.M. 6° 3'

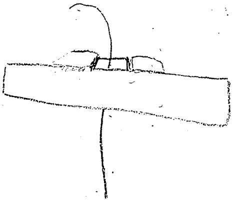
After Aqua Regia 6°

Dec 31 11.45 Noon 5° 58'

5° 55'

[illegible] 7 1 PM 6° 4'

6° 4'



Action of Magnet on Light. —

The light introduced into field + to lines of magnetic induction

For Faradays Glass Coef = 1.

CS_2 = .74

$ZnCl_2$ = .77

Flint Glass = .53

See Verdet & C. Neumann

Infl of Temp on Magnet I

Jan 8. —

4 P.M.

Defl	Temp
2° 49′	26°.9
2° 49′	34°.4
2° 49′	47°.7
2° 40′	63°.8
2° 24′	83°.0
2 28	— On Cooling
2° 45	(Shifted)
2° 40	98°

Supersaturation of Vapor

H_2O over paraffine —

Heated to about 100° —

Some air in top of tube

around cork —

Heats slowly — [illegible]

[illegible] without any disturbance.

Jan 27 Supersaturation of

CS_2 vapor over H_2O.

dist. water — boiled out —

cooled to 40°. CS_2 introduced

in bent tube water raised to

56° CS_2 then suddenly vaporized

filling the tube. — allowed to cool, — contracted slowly to 43.5° then noticeably faster at 43.0 vapor half gone. — condensing on sides of tube forming drops which cling to glass & in two instances allow H_2O level to rise over them at 42° vapor nearly gone. —

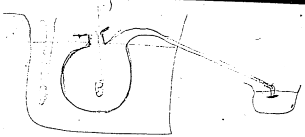
Bar 75.95 mm

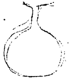
Boiling Pt CS_2 (Watts) 46.6°

Pure – a 47.9° =[illegible]

(Barker) 46.0

[illegible] of value give from 45° 47.9°





.38
8

99235
76
99159

99159) 287.693 (2~~89~~90.032
198318
892750
793272
984780
892431

892750
892431
319000
297477
215230

— NH_3 —

May 20. — Capacity & Coef of Expansion of Receiver. —

Temp 40.2

Wt [illegible]ll = 380.742
93.051

Contents @ 40.2 = 287.693 grms

Density H_2O @ 41° = 0.99197
Density H_2[illegible] 40° = 0.99235
~~62~~
Diff. .00038
p.p @ .1° = .000038
2
.000076
Density @ 40°.2 = .992356
= 0.99228

x cc @ .99228 = 287.693 grms

Contents @ 40°.2 = 289.933 cc

99228) 287.693 (289.933 cc
198456
892370
793804
985660
893052
926080
893052
330280
297684
32596

Temp 33.6°

Wt Full = 381.354
93.051
288.303 gms.

Density @ 33.° = 99485
" " 34° = 99452
Diff .00033
pp. = .000033
6
.000198 .00019
~~994[illegible]~~ 99452
Density @ 33.6° ~~994[illegible]~~ .99471

40.2
33.6
6.6

99471.) 288.303 (289.835 cc
198942
893610
795768
978420
895239
831810
795768
360420
298413
620070

Contents @ 33.6

289.835) 289.933 (1.000337
289.835
0000980000
869505
1105950
869505
2364450
2128845

6.6) .000337 (.00005
33/0

Vols of NH_3 & Aq. —

−15	.996107
−10	.997279
−5	.998602
0	1.
5	1.001472
10	1.003170
15	1.005059
20	1.007140
25	1.009373
30	1.011734
35	1.014247
40	1.01696
45	1.019531

Muncke —
Ausdehnung
Tropfbaren
Flüssigkeiten
~~Mem~~
Acad. St Pe
(Memoirs pres
par divers Sava
(p. 354) 1831

Sp Gr = .9463 — Gave bubbles
@ 12.5°C @ 45°C